WM-FX491/FX491ST/FX493/FX493ST

SERVICE MANUAL

Ver 1.2 2001.08

US Model
WM-FX493/FX493ST
Canadian Model
WM-FX491/FX491ST/FX493ST
AEP Model
E Model
Chinese Model
WM-FX491/FX493

Photo : WM-FX493

About new "WM" logo model of WM-FX491(AEP, Canadian), refer to other service manual (9-873-275-01).

Model Name Using Similar Mechanism	WM-FX477
Tape Transport Mechanism Type	MT-WMEX404-147

SPECIFICATIONS

- **Frequency range**
  FM: 87.5–108 MHz
  AM: 530–1710 kHz (US, Canadian, 5E, 6E model)
  531–1602 kHz (EXCEPT US, Canadian, 5E, 6E model)
- **Power requirements**
  3 V DC batteries R6 (size AA) x 2
- **Dimensions (w/h/d)**
  Approx. 115.8 x 83.2 x 30.1 mm, incl. projecting parts and controls
- **Mass**
  Approx. 115 g/Approx. 195 g (incl. a battery and a cassette)
- **Supplied accessories**
  Stereo headphones or earphones with remote control (1) (FX493/FX493ST)/Stereo headphones or earphones (1) (FX491/FX491ST)

Design and specifications are subject to change without notice.

- Abbreviation
  5E, 6E : South America

Battery life (approximate hours) (EIAJ*)

	Sony alkaline LR6 (SG)	Sony R6P (SR)
Tape playback	25	7.5
Radio reception	40	14

* Measured value by the standard of EIAJ (Electronic Industries Association of Japan). (Using a Sony HF series cassette tape)

Note
- The battery life may shorten depending on the operation of the unit.

RADIO CASSETTE PLAYER

9-927-641-13
2001H0200-1

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Sony Corporation
Parsonal Audio Company
Shinagawa Tec Service Manual Production Group

SONY®

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Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

Notes on chip component replacement

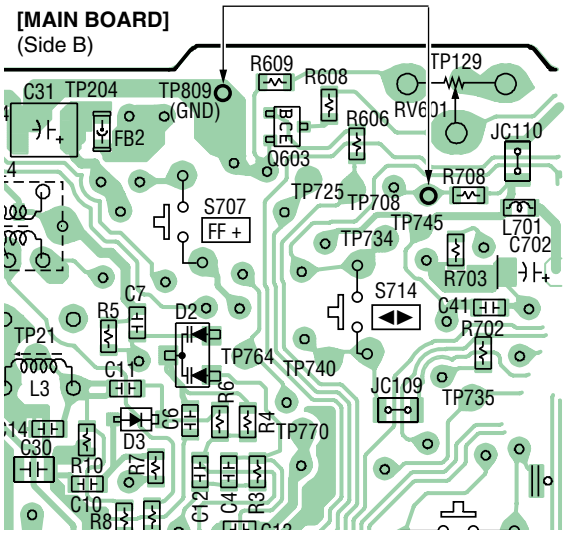
- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SERVICING NOTES

Writing EEPROM

When IC703 (EEPROM) is replaced, write the destination for the set into the EEPROM with the following method.

1. Use a wire to short TP708 to ground.
2. Press the key below that matches the destination or short the printed pattern section with tweezers or the like.
   STOP key: US, Canadian
   PLAY key: E, 5E, 6E, 9E
   FF key: AEP, French, CEV, Saudi Arabia, Chinese
3. The moment the key is pressed, the destination is written into the EEPROM from the microprocessor. (It is also possible to rewrite after writing.)
4. Remove the shorting wire connected in 1.

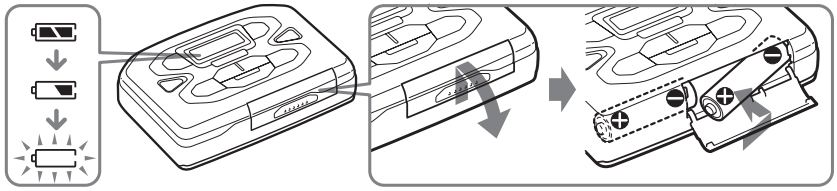


SECTION 1
GENERAL

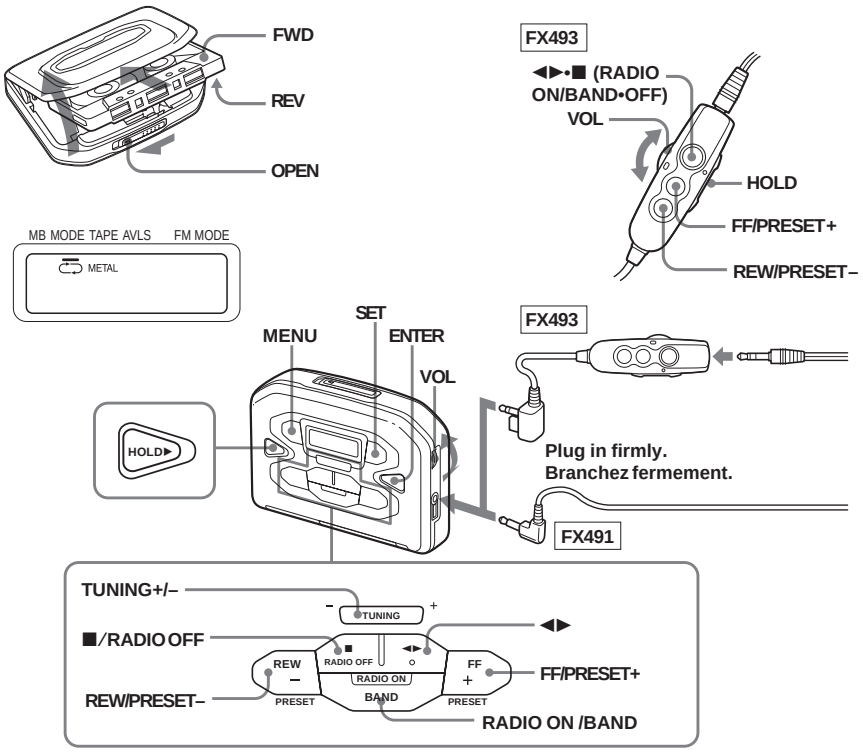
This section is extracted from instruction manual.

LOCATION AND FUNCTION OF CONTROLS

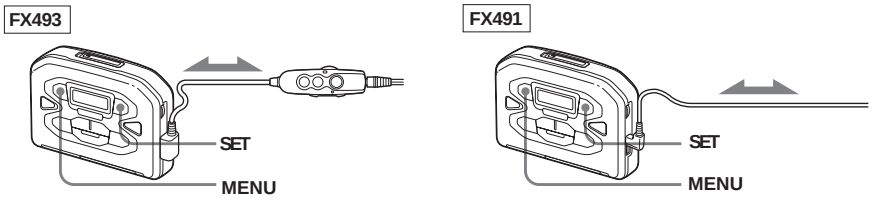
A



B



C



Preparations

To Insert Batteries A

1 Slide and open the battery compartment lid, and insert two R6 (size AA) dry batteries with correct polarity.

Replace the batteries with new ones when " ▭ " flashes in the display.

Playing a Tape B

1 If the HOLD function is turned on, slide the HOLD switch in the opposite direction of the arrow to unlock the controls.

2 Insert a cassette and press MENU repeatedly to set the cursor to TAPE in the display. Then press SET to select the tape type.

No message: normal (TYPE I)
METAL: CrO_2 (TYPE II) or metal (TYPE IV)

3 Press ◀▶ on the main unit, or if using the remote control (FX493 only), press ◀▶ (play)•■ (stop).

Adjust the volume with VOL.

When adjusting the volume on the Walkman (FX493 only)
Set the VOL control on the remote control at maximum.

When adjusting the volume on the remote control (FX493 only)
Set the VOL control on the Walkman slightly above the appropriate level.

Note on the cassette holder
When opening the cassette holder, press the ■ (stop) button and make sure the tape is stopped by checking through the cassette window, then slide the OPEN switch.
If the cassette holder is opened before the tape is stopped, the tape may loosen and be damaged.

Operation on the main unit

To	Press
Switch playback to the other side	◀▶ (play)during playback
Stop playback	■

Operation on the remote control (FX493 only)

To	Press
Switch playback to the other side	◀▶•■ for 2 seconds or more during playback
Stop playback	◀▶•■ once during playback

Other tape operations

To	Press
Fast forward*	FF during stop
Rewind*	REW during stop
Play the same side from the beginning (Auto Play function)	REW during playback
Play the other side from the beginning (Skip Reverse function)	FF during playback

* For FX493 only: If ◀▶•■ on the remote control is pressed during fast forward or rewind, the Walkman switches to playback.

To select playback mode

Press MENU repeatedly to set the cursor to MODE in the display.
Then press SET to select the desired mode.

To play	Select
Both sides repeatedly	⇆
Both sides once from the side facing the cassette holder	⇄

Listening to the Radio B

1 If the HOLD function is turned on, slide the HOLD switch in the opposite direction of the arrow to unlock the controls.

2 Press RADIO ON/BAND to turn on the radio.

3 Press RADIO ON/BAND repeatedly to select AM, FM1, FM2 or FM3.

4 Press TUNING +/– to tune in to the desired station.

If you keep pressing TUNING+/– for a few seconds, the Walkman will start tuning to the stations automatically.

To turn off the radio
Press ■•RADIO OFF.

To improve the broadcast reception C
• **For FM:** Extend the headphones/earphones cord (antenna) (FX491) or remote control cord (antenna) (FX493). If the reception is still not good, press MENU repeatedly to set the cursor to FM MODE in the display.
• **For AM:** Reorient the unit itself.

Presetting Radio Stations

You can store radio stations into the unit's memory. You can preset up to 32 radio stations, 8 for each FM1, FM2, FM3 or AM bands.

1 Press RADIO ON/BAND to turn on the radio.

2 Press RADIO ON/BAND repeatedly to select AM, FM1, FM2 or FM3.

3 Press ENTER.

The frequency digits and a preset number flash in the display.

4 While the frequency digits and the preset number are flashing, tune in to a station you wish to store using TUNING+/–, and select a preset number using PRESET+/–.

5 While the frequency digits and the preset number are flashing, press ENTER.

Notes
• If you cannot complete step 4 or 5 while the indications are flashing, repeat from step 3.
• If a station is already stored, the new station replaces the old one.

To cancel the stored station
Follow the procedure above and in step 3, instead of tuning in to a station, press and hold TUNING +/– until "- - - -" is displayed. Press ENTER while "- - - -" is flashing.

To play the preset radio stations

1 Press RADIO ON/BAND to select the band.

2 Press PRESET+/–.

To operate from the remote control (FX493 only)

To turn on the radio, press RADIO ON/BAND•OFF for more than one second (only while the tape is in stop mode).
To select the band, press RADIO ON/BAND•OFF for more than one second while the radio is on.
To tune in or recall a preset station, press PRESET + or –.
To turn off the radio, press RADIO ON/BAND•OFF.

Using Other Functions

To lock the controls

Set the HOLD switch to the direction of the arrow to lock the controls.

To emphasize bass sound

Press MENU repeatedly to set the cursor to MB in the display. Then, press SET to turn MB on. With each press, the indications change as follows.
MB (MEGA BASS) : emphasizes bass sound
No message: off (normal)

Notes
• If the sound is distorted with the mode "MB", turn down the volume of the main unit or select normal mode.
• Bass emphasis may not show great effect if the volume is turned up too high.

To protect your hearing—AVLS (Automatic Volume Limiter System) function

When you set the AVLS function to active, the maximum volume is kept down to protect your ears.

Press MENU repeatedly to set the cursor to AVLS in the display. Then press SET to show "☺".

Note
• The AVLS setting will be canceled when you replace the batteries.

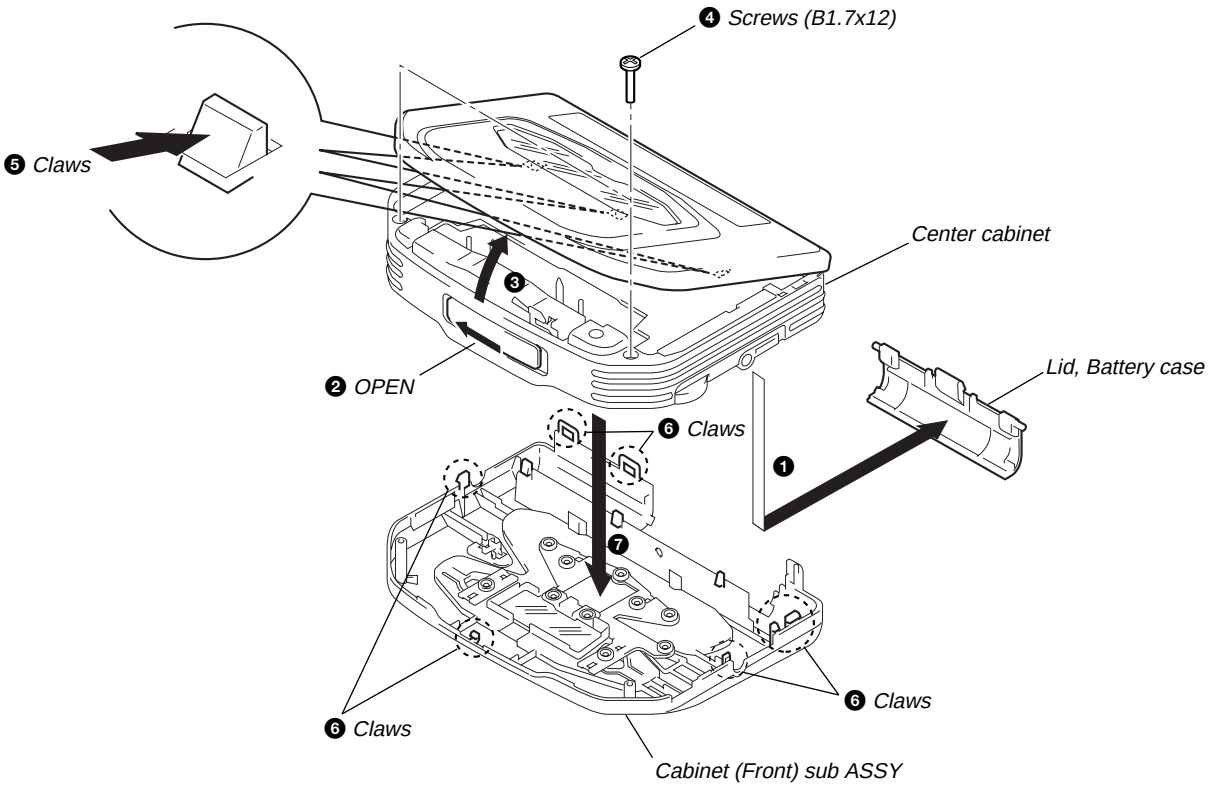
SECTION 2
DISASSEMBLY

● The equipment can be removed using the following procedure.

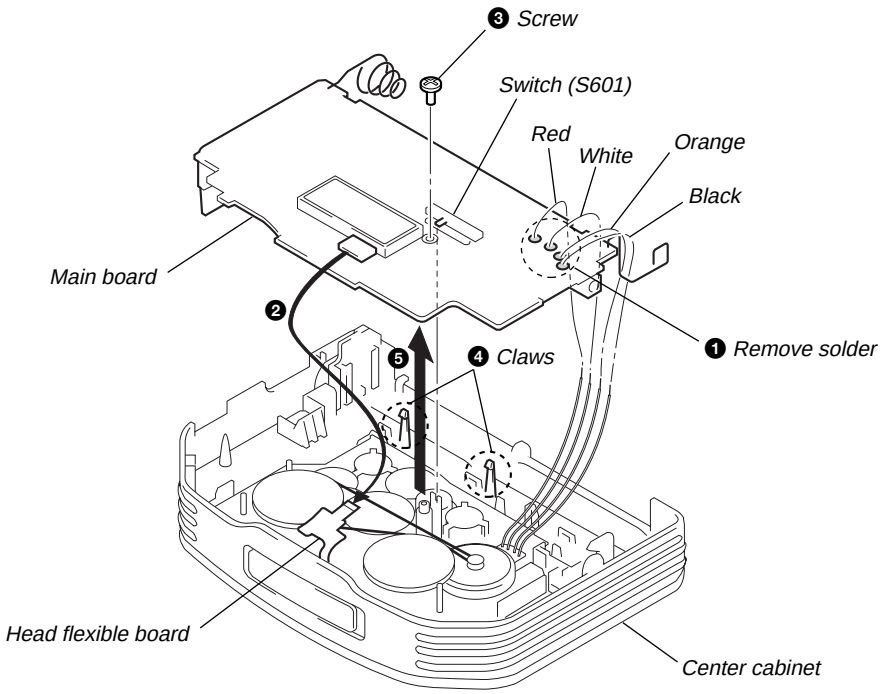
Set → Cabinet (Front) sub ASSY → Main board → Mechanism deck → Belt, Motor (Capstan/reel) (M901)
Cabinet (Front) sub ASSY → Holder sub ASSY, Cassette

Note : Follow the disassembly procedure in the numerical order given.

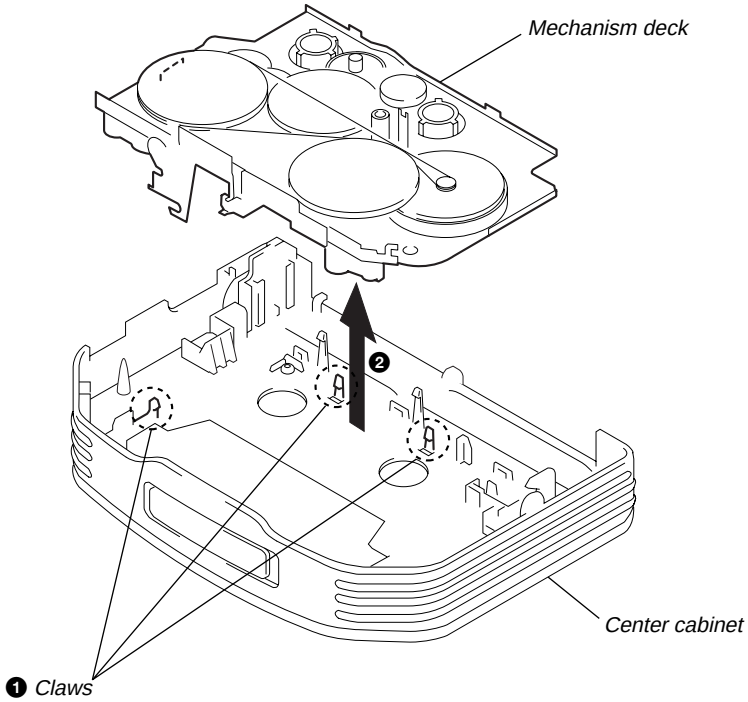
2-1. CABINET (FRONT) SUB ASSY



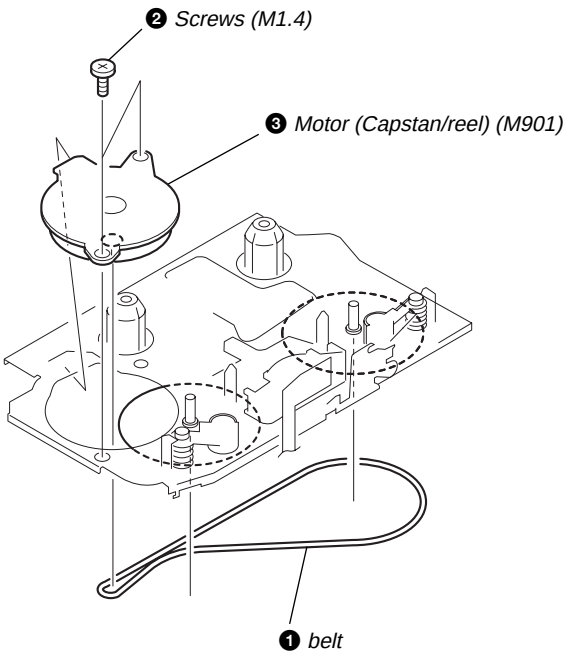
2-2. MAIN BOARD



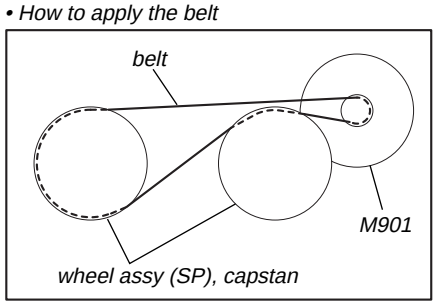
2-3. MECHANISM DECK



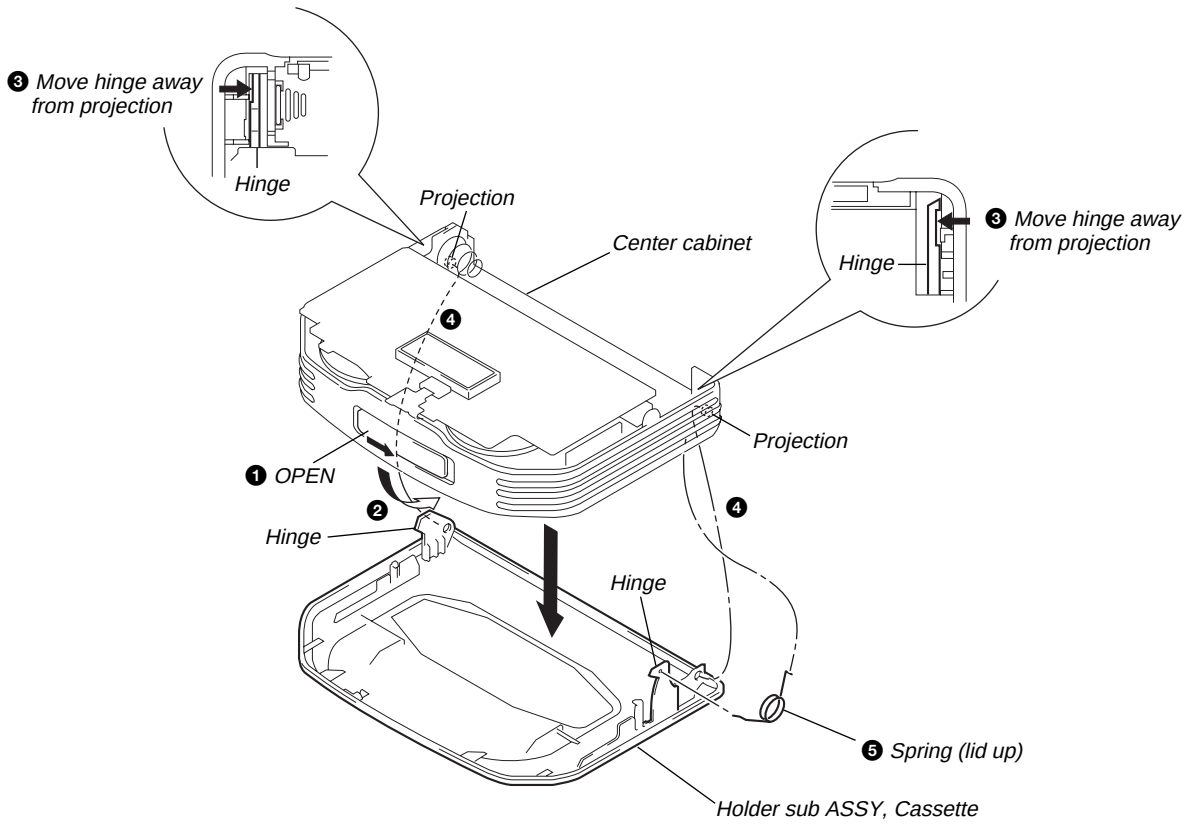
2-4. BELT, MOTOR (CAPSTAN/REEL) (M901)



• How to apply the belt

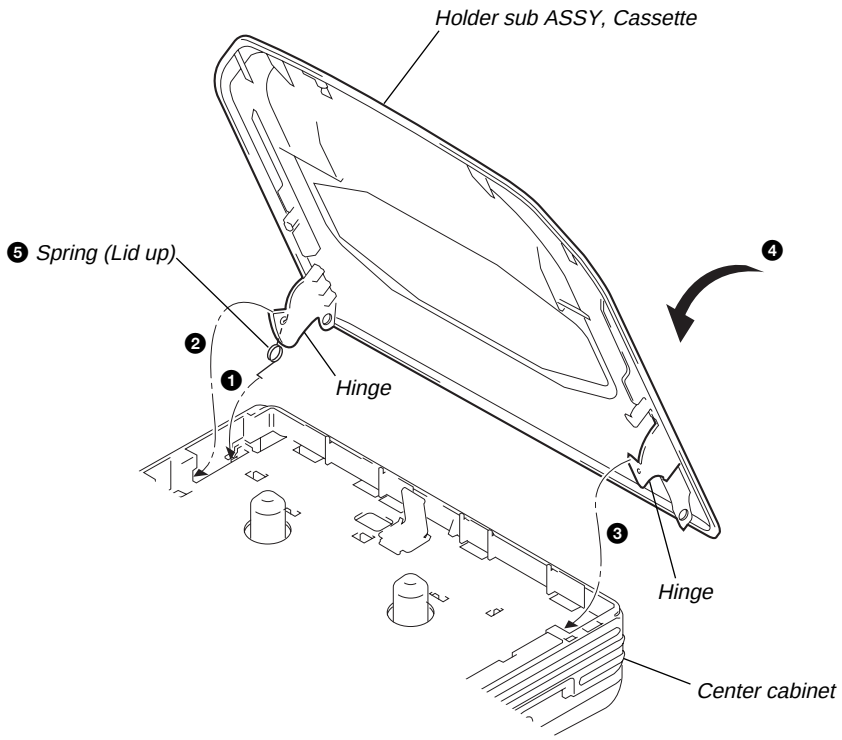


2-5. “HOLDER SUB ASSY, CASSETTE”



● CAUTIONS DURING ASSEMBLY

❶ Insert the spring (Lid up) to the slot as shown in the figure.
❷ ❸ Insert the hinge of the “Holder sub ASSY, Cassette”.
❹ Close the “Holder sub ASSY, Cassette” then press it.



SECTION 3
ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab :
   playback head　　pinch roller
   capstan　　rubber belt
2. Demagnetize the playback head with a head demagnetizer. Do not use a magnetized screwdriver for the adjustments.
3. These measurement and adjustment should be performed with the rated power supply voltage (2.5 V) unless otherwise noted.

Torque Measurement

Mode	Torque meter	Meter reading
FWD	CQ-102C	20 – 42 g • cm (0.28 – 0.58 oz• inch)
FWD back tension		less than 2 g • cm (less than 0.027 oz• inch)
REV	CQ-102RC	20 – 42 g • cm (0.28 – 0.58 oz• inch)
REV back tension		less than 2 g • cm (less than 0.027 oz• inch)
FF, REW	CQ-201B	more than 60 g • cm (more than 0.84 oz• inch)

3-2. ELECTRICAL ADJUSTMENTS

PRECAUTION

- Supplied voltage : 2.5V.
- Switch and control position
  MEGA BASS : OFF
  VOLUME control : maximum
  AVLS : NORM

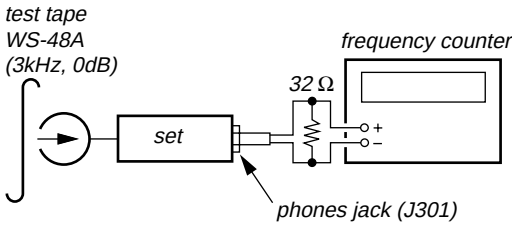
TAPE SECTION　　0 dB = 0.775V

Test Tape

Type	Signal	Used for
WS-48A	3kHz, 0dB	Tape Speed Adjustment

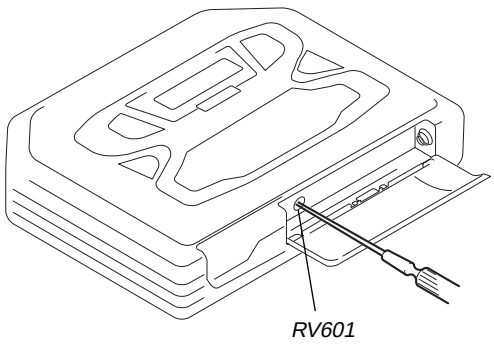
Tape Speed Adjustment

Procedure :



1. Playback WS-48A (tape center part) in the FWD state and adjust RV601 so that the frequency counter reading becomes 3,000Hz.
   Standard value : 2,985–3,015Hz
2. Playback WS-48A (tape center part) in the REV state.
   Check that frequency counter reading is within ±1.0% of the reading of step 1.

Adjustment Location :

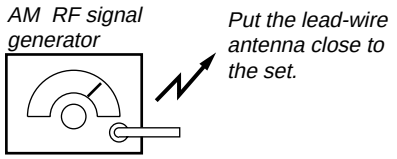


TUNER SECTION

0 dB = 1μV

AM Section

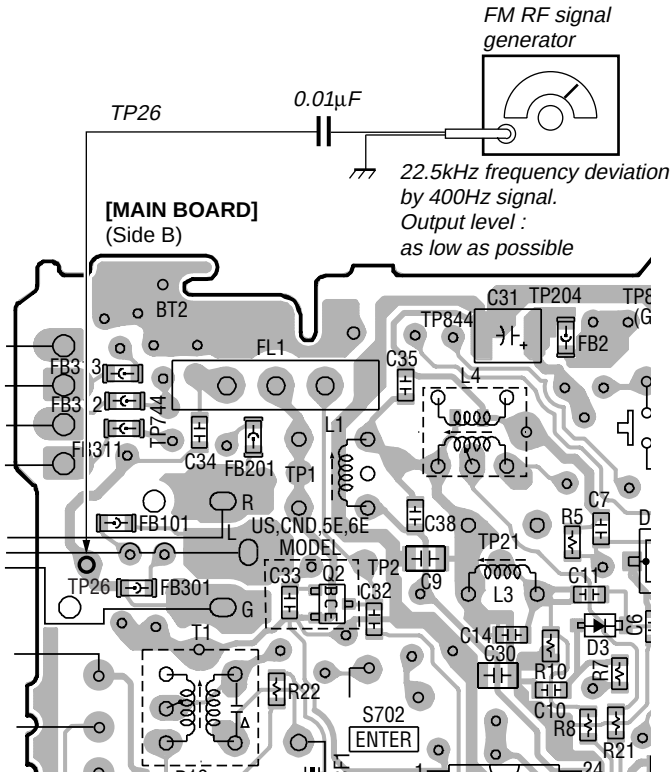
BAND : AM

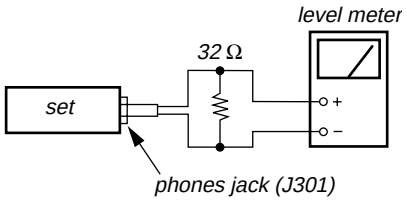


30% amplitude modulation by 400Hz signal.
Output level : as low as possible

FM Section

BAND : FM





- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

< > : US, Canadian, 5E, 6E model
[ ] : Saudi Arabia model

AM IF ADJUSTMENT	
Adjust for a maximum reading on level meter.	
T1	450kHz

AM FREQUENCY COVERAGE ADJUSTMENT		
Adjust parts	Frequency display	Reading on digtal voltmeter
L4	531kHz < 530kHz>	Adjustment value : 1.7V Standard value : 1.6-1.8V
Confirmation	1,710kHz	Standard value : 8.8V

AM TRACKING ADJUSTMENT	
Adjust for a maximum reading on level meter.	
L2	621kHz < 620kHz>
CT1	1,395kHz < 1,400kHz>

FM FREQUENCY COVERAGE ADJUSTMENT		
Adjust parts	Frequency display	Reading on digtal voltmeter
Confirmation	87.5MHz	Standard value : 4.3V
L3	108MHz	Adjustment value : 8.0V Standard value : 7.9-8.1V

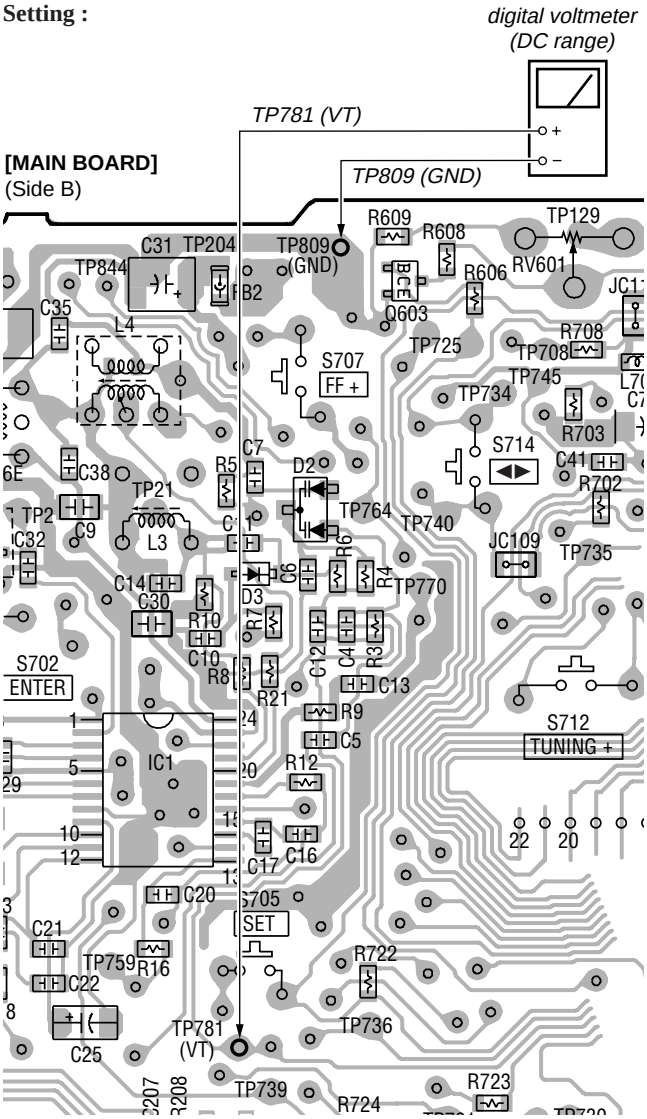
FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on level meter.	
L1	87.5MHz [87.35MHz]
Confirmation	108MHz [108.25MHz]

- Abbreviation
  5E, 6E : South America

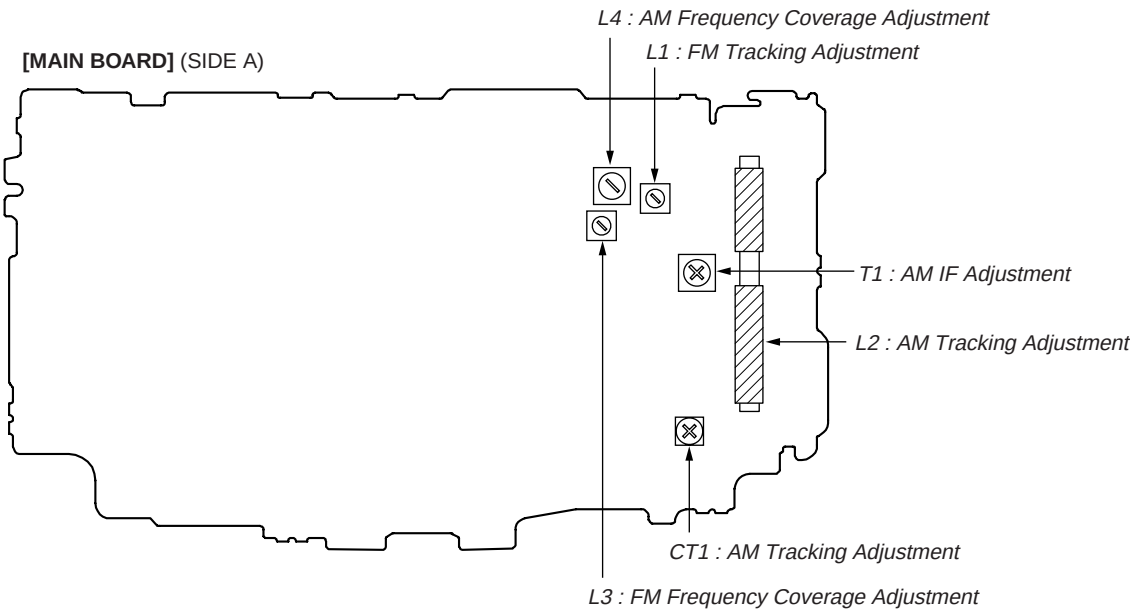
Adjustment Location : Main board (See page 10)

Frequency Coverage Adjustment

Setting :



Adjustment Location :


L4 : AM Frequency Coverage Adjustment
L1 : FM Tracking Adjustment
[MAIN BOARD] (SIDE A)
T1 : AM IF Adjustment
L2 : AM Tracking Adjustment
CT1 : AM Tracking Adjustment
L3 : FM Frequency Coverage Adjustment

SECTION 4
DIAGRAMS

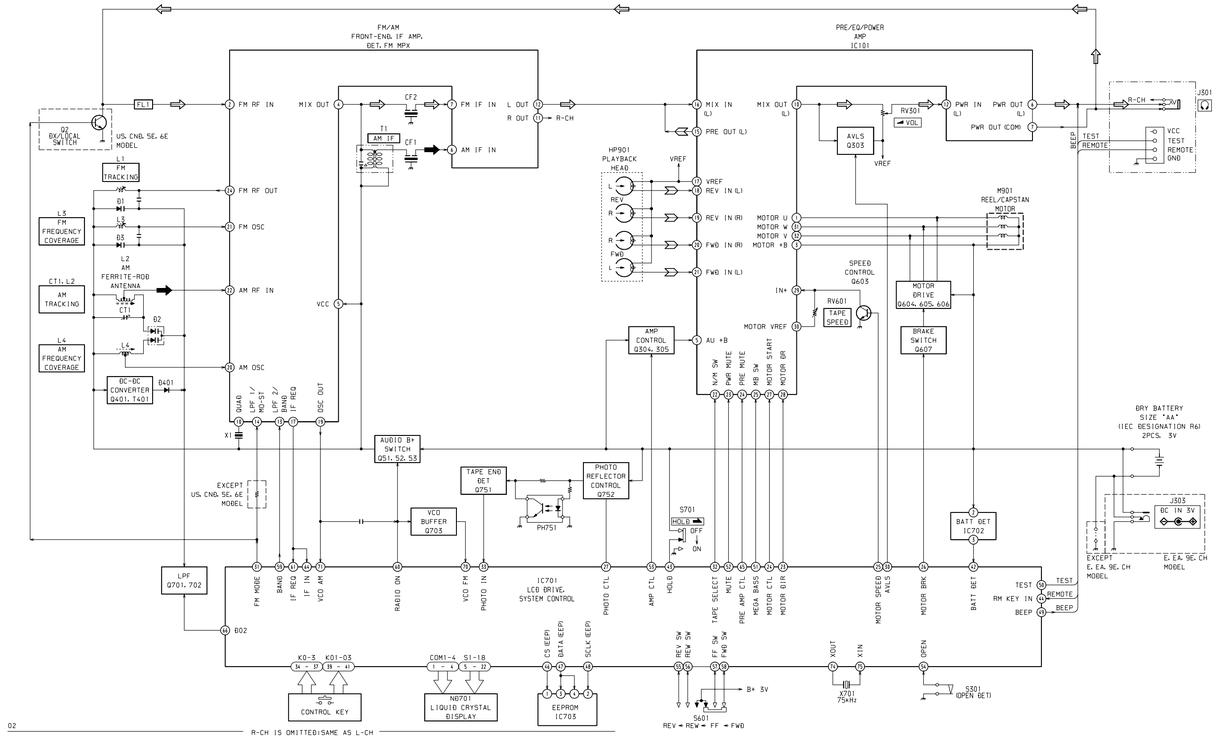
4-1. EXPLANATION OF IC TERMINALS

IC701 TC9327AF-621 (SYSTEM CONTROL/LCD DRIVE)

Pin No.	Pin Name	I/O	Pin Description
1– 4	COM1 – 4	O	LCD driver common output.
5 – 22	S1 – 18	O	LCD driver output.
23	MOTOR DIR	O	Motor rotation direction control output (FWD: L, REV: H).
24	MOTOR CTL	O	Motor ON/OFF control output (OFF: L, ON: H).
25	MOTOR SPEED	O	Motor speed control output (Normally: L, Speed down: H).
26	MOTOR BRK	O	Motor brake control output (Brake OFF: L, Brake ON: H).
27	PHOTO CTL	O	Photo reflector rotation detection control output.
28	DOLBY	—	Not used (OPEN).
29	NC	—	Not used (OPEN).
30	AVLS	O	AVLS control output (AVLS OFF: L, AVLS IN: H).
31	FM MODE	O	LOCAL/DX control output (DX: L, LOCAL: H) (US, CND, 5E, 6E only).
32	TAPE SELECT	O	Tape select control output (Normal: L, CrO2/METAL: H).
33	PHOTO IN	I	Photo reflector rotation detection input.
34 – 37	K0 – 3	I	Key input 0 – 3.
38	NC	—	Not used (OPEN).
39 – 41	KO1 – 3	I	Key input 1 – 3.
42	BATT DET	I	Power supply voltage detection input (A/D input).
43	HOLD	I	HOLD input.
44	RM KEY IN	I	Remote control key input.
45	AD REF	I	Reference voltage of pin 43 and 44.
46	CS	O	Chip select output for EEPROM.
47	DATA	O	Data output for EEPROM.
48	SCLK	O	SCLK output for EEPROM.
49	BEEP	O	BEEP output.
50	TEST	I	Test mode select terminal (Connect to remote contorol).
51	MEGA BASS	O	MEGA BASS control output (ON: L, OFF: H).
52	MUTE	O	Mute signal output (OFF: L, ON: H)
53	AMP CTL	O	Power AMP ON/OFF control output.
54	OPEN	I	OPEN switch input.
55	REV SW	I	Mechanism deck mode detection switch input (REV ON: H).
56	REW SW	I	Mechanism deck mode detection switch input (REW ON: H).
57	FF SW	I	Mechanism deck mode detection switch input (FF ON: H).
58	FWD SW	I	Mechanism deck mode detection switch input (FWD ON: H).
59	BAND	O	BAND select output (AM: L, FM: input).
60	RADIO ON	O	RADIO ON/OFF control output (OFF: L, ON: H).
61	IF REQ	O	IF request output (Auto scan: L, Normally: H).
62	NC	—	Not used (OPEN).
63	TEST/NC	—	Not used (OPEN).
64	IF IN	I	IF input.
65	PRE AMP CTL	O	Preamp mute signal output.
66	D02	O	VT control signal output.
67	HOLD	—	Fixed at “H” in this set.
68	NC	—	Not used (OPEN).
69	GND	—	Ground.
70	VCO FM	I	VCO (FM) input.

Pin No.	Pin Name	I/O	Pin Description
71	VCO AM	I	VCO (AM) input.
72	VDD	—	Power supply pin.
73	RESET	I	Reset input. Connect to VDD.
74	XOUT	O	Crystal oscillator output (75 kHz).
75	XIN	I	Crystal oscillator input (75 kHz).
76	VXT	—	Stabilized capacitor connection of crystal oscillation power supply.
77	VLCD	—	LCD driver power rising pressure pin.
78, 79	C1, 2	—	LCD driver power rising pressure pin.
80	VEE	—	1.5 V constant voltage power supply for LCD driver.

4-2. BLOCK DIAGRAM



- Signal path.
  - ⇨ : FM
  - ➡ : AM
  - ⇨ : PB
- Abbreviation
  - CND : Canadian
  - EA : Saudi Arabia
  - CH : Chinese
  - 9E : Indication of country of origin
  - 5E, 6E: South America

4-3. PRINTED WIRING BOARDS

● **Semiconductor Location**

Ref. No.	Location
D1	C-18
D2	C-4
D3	C-4
D301	B-19
D401	E-14
D402	E-14
IC1	D-3
IC101	D-9
IC701	C-14
IC702	B-17
IC703	C-15
Q2	C-3
Q51	B-13
Q52	B-13
Q53	B-13
Q303	E-4
Q304	B-12
Q305	B-13
Q401	D-14
Q603	B-4
Q604	C-11
Q605	C-11
Q606	C-12
Q607	C-11
Q701	E-14
Q702	E-7
Q703	B-15
Q751	B-14
Q752	B-14

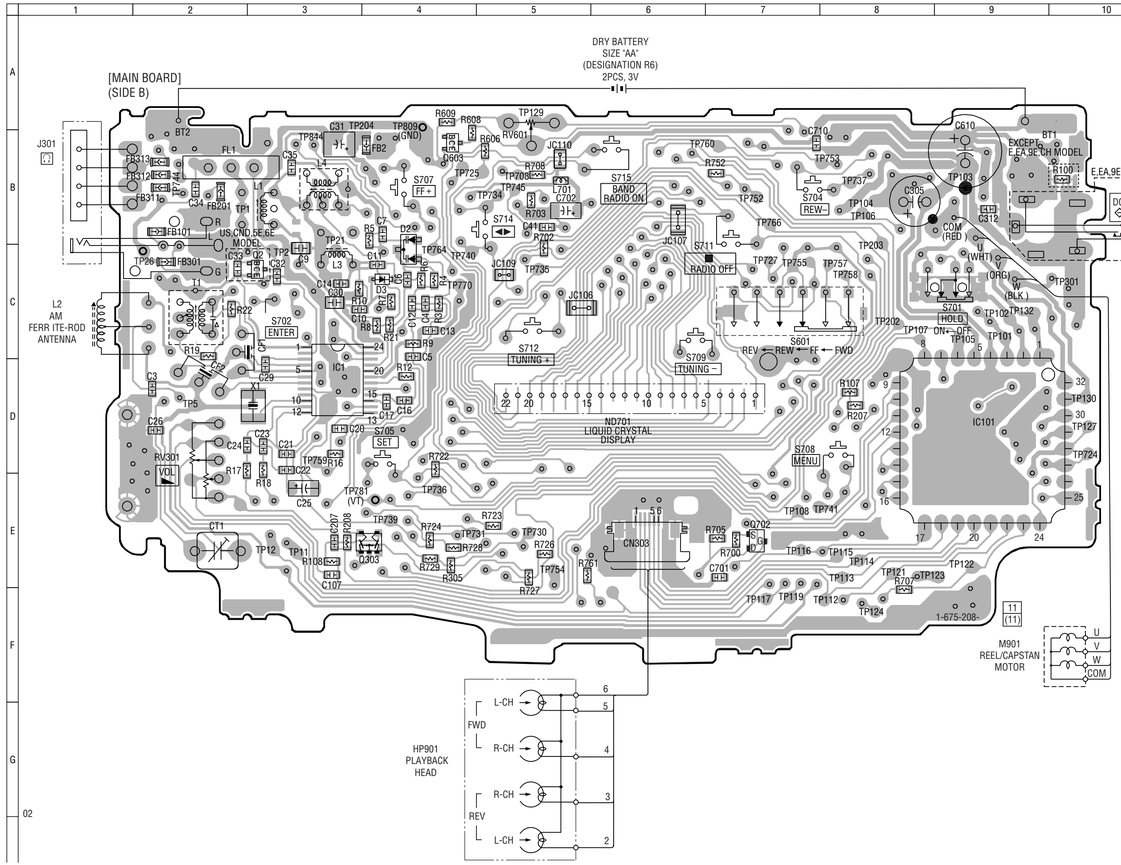
Note:

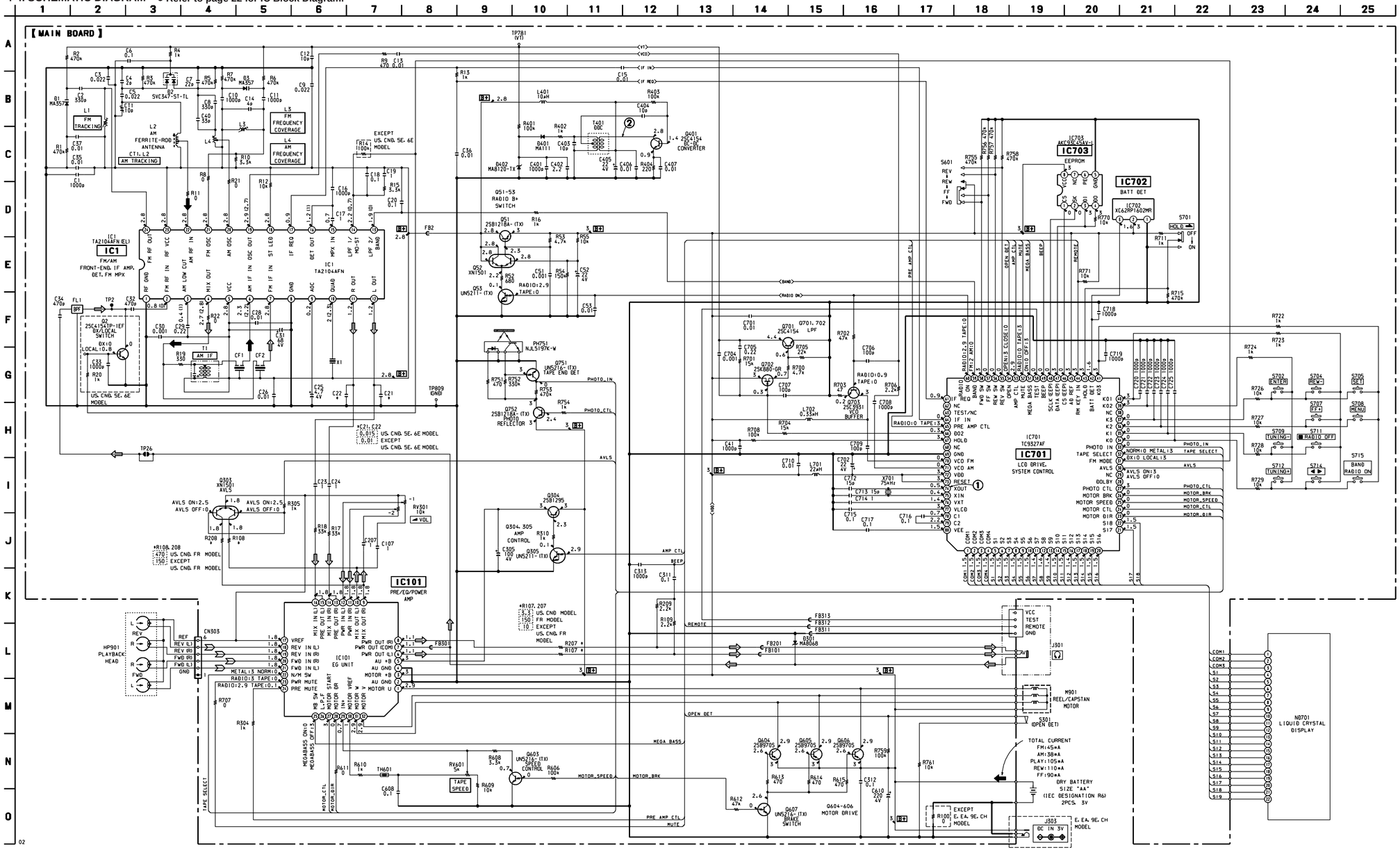
- ⟷ : parts extracted from the component side.
- ○ : Through hole.
- ▨ : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

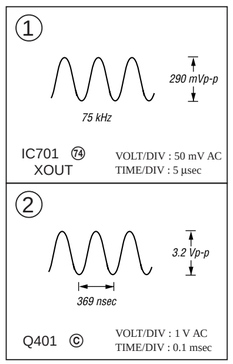
Caution:	
Pattern face side: (Side B)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A)	Parts on the parts face side seen from the parts face are indicated.

- Abbreviation
  - CND : Canadian
  - FR : French
  - EA : Saudi Arabia
  - CH : Chinese
  - E : Indication of country of origin
  - 9E : No Indication of country of origin
  - 5E, 6E: South America
  - CEV : Ukraine, Hungary, Czech





● Waveforms

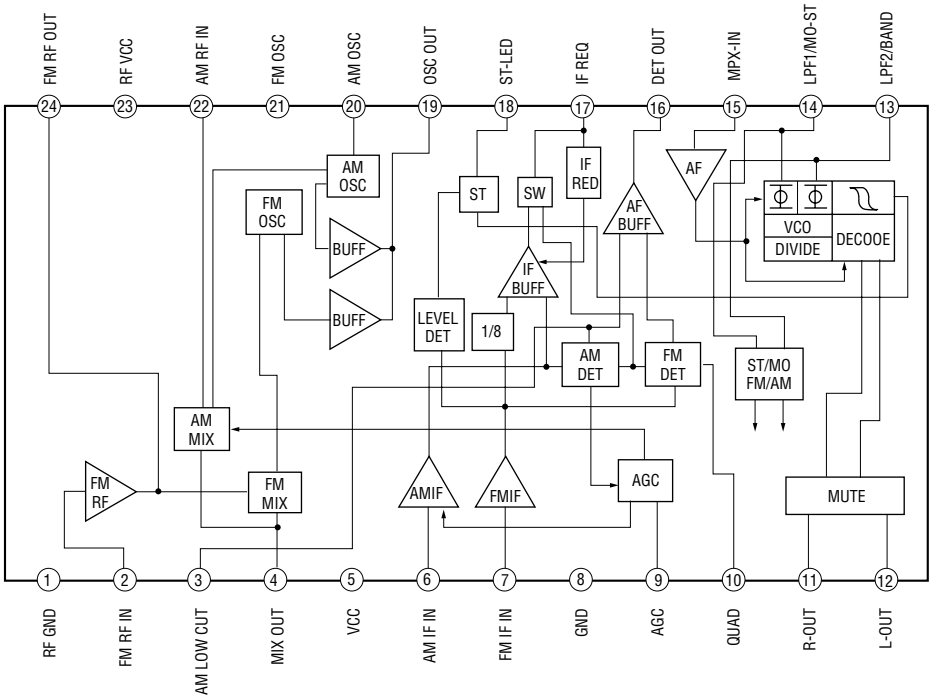


Note:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- △ : internal component.
- B+ : B+ Line.
- ▭ : adjustment for repair.
- Power voltage is dc 3V and fed with regulated dc power supply from battery terminal.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : FM (RADIO SECTION)
  PLAY (TAPE SECTION)
  ( ) : AM
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : FM
  ➡ : AM
  ⇨ : PB
- Abbreviation
  CND : Canadian
  FR : French
  EA : Saudi Arabia
  CH : Chinese
  E : Indication of country of origin
  9E : No Indication of country of origin
  5E, 6E: South America
  CEV : Ukraine, Hungary, Czech

● **IC Block Diagram.**

IC1 TA2104AFN (EL)

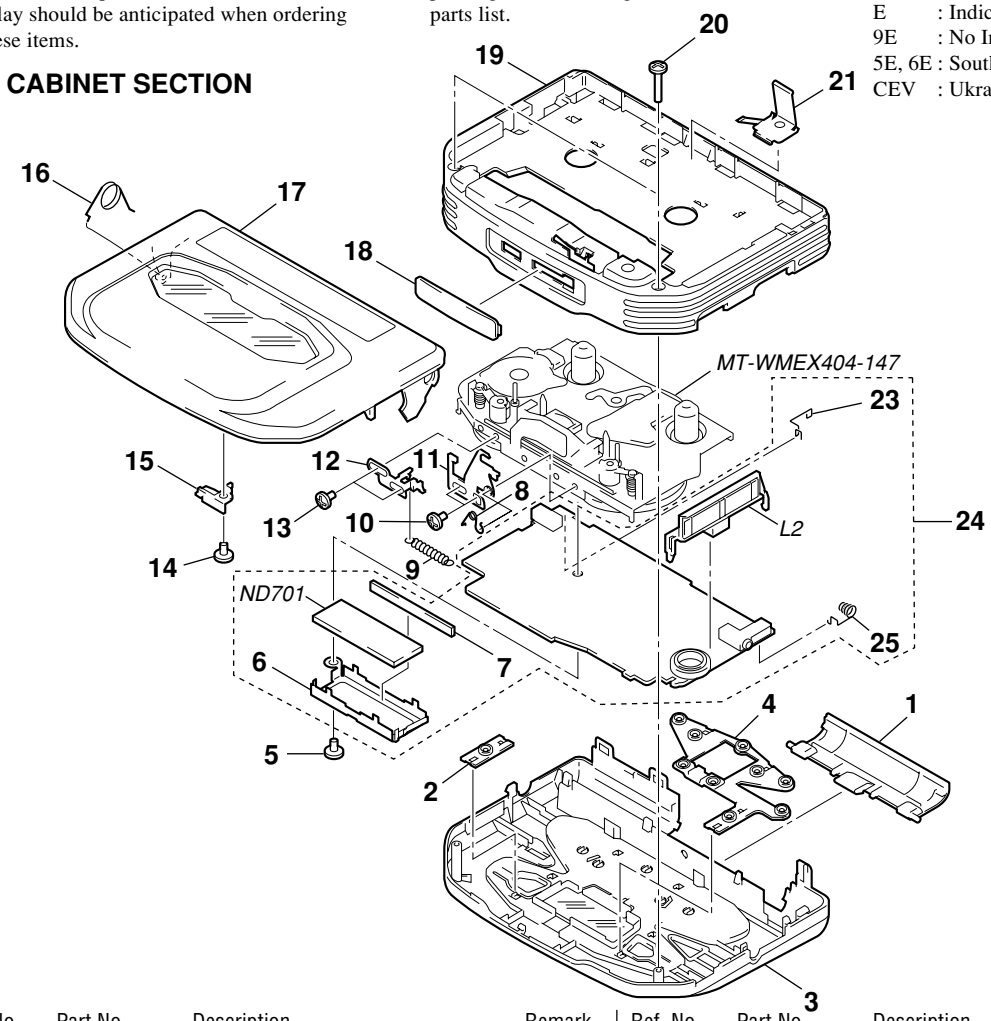


SECTION 5
EXPLODED VIEWS

NOTE :

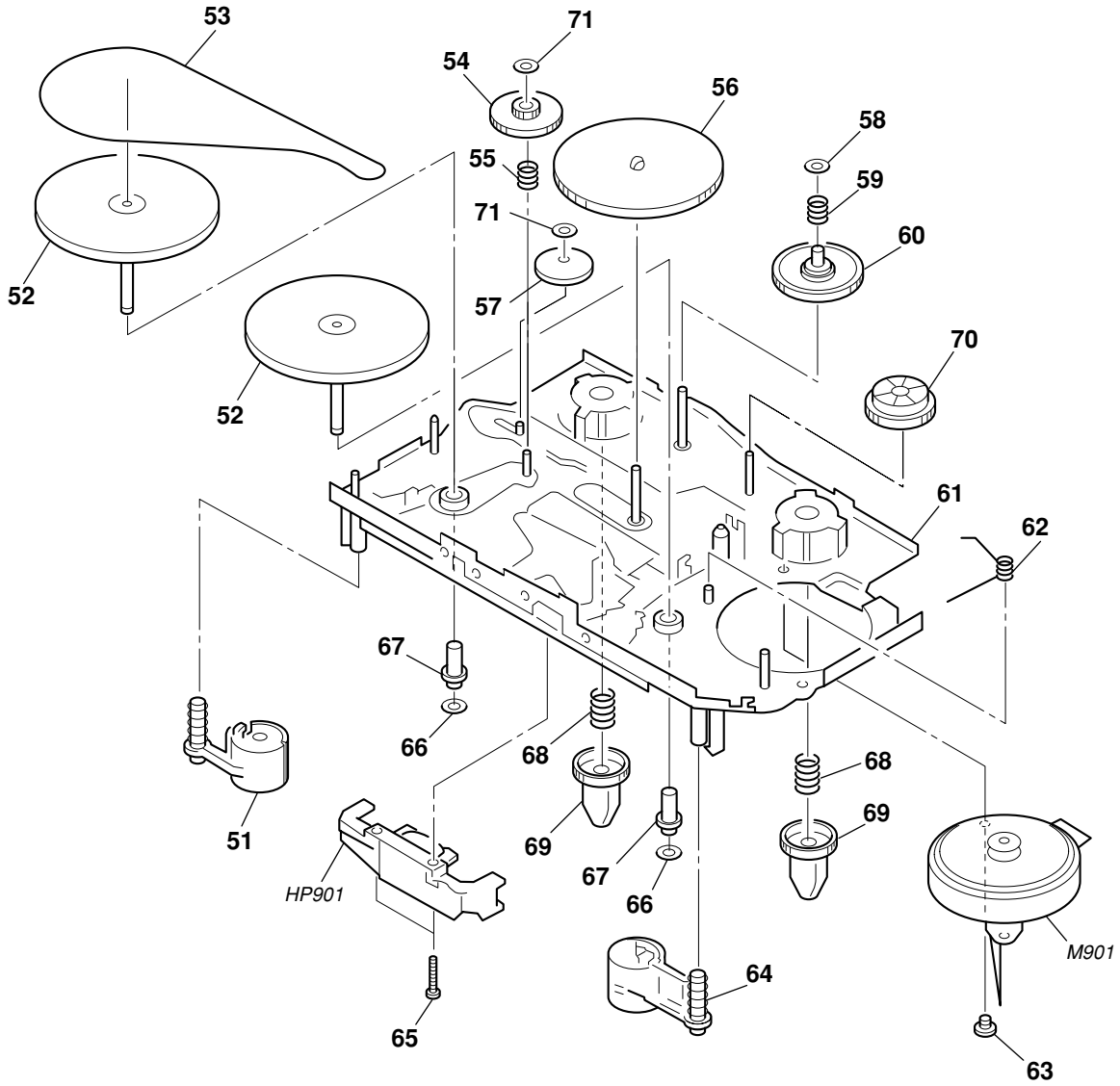
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- Abbreviation
  CND : Canadian
  FR : French
  EA : Saudi Arabia
  CH : Chinese
  E : Indication of country of origin
  9E : No Indication of country of origin
  5E, 6E : South America
  CEV : Ukraine, Hungary, Czech

5-1. CABINET SECTION



Ref. No.	Part No.	Description	Remark
1	3-039-652-01	LID,BATTERY CASE (FX491,FX491ST)	
1	3-039-652-11	LID,BATTERY CASE (FX493,FX493ST)	
2	3-039-658-01	RUBBER (B), BUTTON	
3	X-3378-293-1	CABINET (FRONT) SUB ASSY(FX491,FX491ST)	(FORMER TYPE)
3	X-3378-294-1	CABINET (FRONT) SUB ASSY(FX493,FX493ST)	(FORMER TYPE)
3	X-3381-169-1	CABINET (FRONT) (FX493) (NEW TYPE)	
3	X-3381-167-1	CABINET (FRONT) SUB ASSY(FX491)	(NEW TYPE)
4	3-039-657-01	RUBBER (A), BUTTON	
5	3-704-197-11	LOCK,SERRAT IB	
* 6	3-039-660-01	HOLDER (LCD)	
7	3-040-176-01	RUBBER, CONDUCTIVE	
8	3-022-857-01	SPRING (OPEN)	
9	3-022-856-01	SPRING (KNOB), TENSION	
10	3-704-197-91	SCREW (M1.4X1.8), LOCKING	
11	3-019-421-01	LEVER, OPEN	
12	3-019-422-01	JOINT	
13	3-349-825-31	SCREW	
14	3-318-382-61	SCREW (1.7X2.5), TAPPING	
15	3-039-661-01	LOCKER (OPEN)	
16	3-025-276-01	SPRING (LID UP)	
17	X-3378-289-1	HOLDER SUB ASSY, CASSETTE	(FX491:CND,5E,6E,FX491ST) (FORMER TYPE)
17	X-3378-290-1	HOLDER SUB ASSY, CASSETTE	(FX491:AEP,CEV,FR,E,9E,CH) (FORMER TYPE)
17	X-3378-291-1	HOLDER SUB ASSY, CASSETTE	(FX493:US,5E,6E,FX493ST) (FORMER TYPE)
17	X-3378-292-1	HOLDER SUB ASSY, CASSETTE	(FX493:AEP,CEV,FR,9E,EA,CH) (FORMER TYPE)
17	X-3381-168-1	HOLDER SUB ASSY, CASSETTE (FX491)	(NEW TYPE)
17	X-3381-170-1	HOLDER SUB ASSY, CASSETTE	(FX493:9E,AEP,CEV,E,CH,EA) (NEW TYPE)
17	X-3381-319-1	HOLDER SUB ASSY, CASSETTE	(FX493:5E,6E) (NEW TYPE)
18	3-019-514-31	KNOB(OPEN)	
19	3-039-651-01	CENTER CABINET (US,CND,5E,6E)	
19	3-039-651-11	CENTER CABINET (E,EA,CH)	
19	3-039-651-21	CENTER CABINET (AEP,CEV,FR)	
19	3-039-651-31	CENTER CABINET (9E)	
20	3-318-203-51	SCREW (B1.7X12), TAPPING	
21	3-040-144-01	SPRING (CASSETTE)	
23	3-020-511-01	TERMINAL (+), BATTERY	
24	A-3021-309-A	MAIN BOARD, COMPLETE (US,CND)	
24	A-3021-310-A	MAIN BOARD, COMPLETE (AEP,CEV)	
24	A-3021-311-A	MAIN BOARD, COMPLETE (E,9E,EA,CH)	
24	A-3021-312-A	MAIN BOARD, COMPLETE (5E,6E)	
24	A-3021-313-A	MAIN BOARD, COMPLETE (FR)	
25	3-020-512-01	TERMINAL (-), BATTERY	
L2	1-501-987-21	AM FERRITE-ROD ANTENNA (AM TRACKING)	
ND701	1-803-764-11	DISPLAY PANEL, LIQUID CRYSTAL	

5-2. MECHANISM DECK SECTION (MT-WMEX404-147)



Ref. No.	Part No.	Description	Remark
51	X-3375-020-1	PINCH LEVER (N-F) ASSY	
52	X-3372-619-1	WHEEL ASSY (SP), CAPSTAN	
53	3-354-868-01	BELT	
54	3-021-950-01	GEAR (DF)	
55	3-021-982-01	SPRING (MODE), COMPRESSION	
56	X-3375-024-1	CLUTCH ASSY (F)	
57	3-021-951-01	GEAR (CAM)	
58	3-348-953-21	WASHER	
59	3-021-979-01	SPRING (UDF), COMPRESSION	
60	3-021-949-01	GEAR (BF)	
61	X-3375-022-1	CHASSIS ASSY (F)	
62	3-021-974-03	SPRING (HEAD BASE)	
63	3-703-816-31	SCREW (M1.4), SPECIAL HEAD	
64	X-3375-021-1	PINCH LEVER (R-F) ASSY	
65	3-703-816-73	SCREW (M1.4), SPECIAL HEAD	
66	3-921-797-01	WASHER	
67	3-921-003-01	BEARING	
68	3-022-100-01	SPRING (B.T.), COMPRESSION	
69	3-024-223-01	GEAR (REEL-2)	
70	X-3375-268-1	GEAR (AF-SV) ASSY	
71	3-034-685-01	WASHER (1.03-3.0)	
HP901	1-500-555-11	HEAD, MAGNETIC (PLAYBACK)	
M901	1-763-073-11	MOTOR, DC (CAPSTAN/REEL) (INCLUDING PULLEY)	

SECTION 6
ELECTRICAL PARTS LIST

MAIN

NOTE :

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE :Metal oxide-film resistor
  F : nonflammable
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : µ , for example :
  uA.... : µ A.... , uPA.... : µ PA....
  uPB.... : µ PB.... , uPC.... : µ PC....
  uPD.... : µ PD....
- CAPACITORS
  uF : µ F
- COILS
  uH : µ H

When indicating parts by reference number, please include the board.

- Abbreviation
  CND : Canadian
  FR : French
  EA : Saudi Arabia
  CH : Chinese
  E : Indication of country of origin
  9E : No Indication of country of origin
  5E, 6E : South America
  CEV : Ukraine, Hungary, Czech

Ref. No.	Part No.	Description			Remark
	A-3021-309-A	MAIN BOARD, COMPLETE (US,CND)			
	A-3021-310-A	MAIN BOARD, COMPLETE (AEP,CEV)			
	A-3021-311-A	MAIN BOARD, COMPLETE (E,EA,9E,CH)			
	A-3021-312-A	MAIN BOARD, COMPLETE (5E,6E)			
	A-3021-313-A	MAIN BOARD, COMPLETE (FR)			
		**********			
	3-020-511-01	TERMINAL (+), BATTERY			
	3-020-512-01	TERMINAL (-), BATTERY			
*	3-039-660-01	HOLDER (LCD)			
	3-040-176-01	RUBBER, CONDUCTIVE			
		< CAPACITOR >			
C1	1-115-416-11	CERAMIC CHIP	1000PF	5%	25V
C2	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C3	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C4	1-162-907-11	CERAMIC CHIP	2PF	0.25PF	50V
C5	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C6	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C7	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C8	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C9	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C10	1-115-416-11	CERAMIC CHIP	1000PF	5%	25V
C11	1-115-416-11	CERAMIC CHIP	1000PF	5%	25V
C12	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C13	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C14	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V
C15	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C16	1-115-416-11	CERAMIC CHIP	1000PF	5%	25V
C17	1-115-156-11	CERAMIC CHIP	1uF		10V
C18	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C19	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C20	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C21	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(EXCEPT US,CND,5E,6E)
C21	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
					(US,CND,5E,6E)
C22	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(EXCEPT US,CND,5E,6E)
C22	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
					(US,CND,5E,6E)
C23	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C24	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C25	1-109-935-11	TANTAL. CHIP	4.7uF	20%	4V
C26	1-162-974-11	CERAMIC CHIP	0.01uF		50V

Ref. No.	Part No.	Description			Remark
C28	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C29	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C30	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C31	1-113-988-11	TANTAL. CHIP	68uF	20%	4V
C32	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C33	1-115-416-11	CERAMIC CHIP	1000PF	5%	25V
					(US,CND,5E,6E)
C34	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C35	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C36	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C37	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C40	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C41	1-115-416-11	CERAMIC CHIP	1000PF	5%	25V
C51	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C52	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C53	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C107	1-115-156-11	CERAMIC CHIP	1uF		10V
C205	1-115-156-11	CERAMIC CHIP	1uF		10V
C207	1-115-156-11	CERAMIC CHIP	1uF		10V
C305	1-124-433-00	ELECT	100uF	20%	4V
C311	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C312	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C313	1-115-416-11	CERAMIC CHIP	1000PF	5%	25V
C401	1-115-416-11	CERAMIC CHIP	1000PF	5%	25V
C402	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C403	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C404	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C405	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C406	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C407	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C608	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C610	1-124-434-00	ELECT	220uF	20%	4V
C701	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C702	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C704	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C705	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C706	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C707	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C708	1-115-416-11	CERAMIC CHIP	1000PF	5%	25V
C709	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C710	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C712	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C713	1-162-917-11	CERAMIC CHIP	15PF	5%	50V

MAIN

Ref. No.	Part No.	Description			Remark
C714	1-115-156-11	CERAMIC CHIP	1uF		10V
C715	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C716	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C717	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C718	1-115-416-11	CERAMIC CHIP	1000PF	5%	25V
C719	1-115-416-11	CERAMIC CHIP	1000PF	5%	25V
C720	1-115-416-11	CERAMIC CHIP	1000PF	5%	25V
C721	1-115-416-11	CERAMIC CHIP	1000PF	5%	25V
C722	1-115-416-11	CERAMIC CHIP	1000PF	5%	25V
C723	1-115-416-11	CERAMIC CHIP	1000PF	5%	25V
C724	1-115-416-11	CERAMIC CHIP	1000PF	5%	25V
C725	1-115-416-11	CERAMIC CHIP	1000PF	5%	25V
		< FILTER >			
CF1	1-781-271-11	FILTER, CERAMIC			
CF2	1-781-152-11	FILTER, CERAMIC			
		< CONNECTOR >			
CN303	1-750-346-21	CONNECTOR, FFC/EPC (ZIF) 6P			
		< TRIMMER >			
CT1	1-141-463-11	CAP, ADJ 10PF (AM TRACKING)			
		< DIODE >			
D1	8-719-053-30	DIODE MA2S357-(TX). SO			
D2	8-719-072-58	DIODE SVC347-TL			
D3	8-719-053-30	DIODE MA2S357-(TX). SO			
D301	8-719-017-58	DIODE MA8068			
D401	8-719-073-01	DIODE MA111-(K8).S0			
D402	8-719-056-89	DIODE UDZ-TE-17-12B			
		< FERRITE BEAD >			
FB2	1-500-113-22	FERRITE			
FB101	1-500-113-22	FERRITE			
FB201	1-500-113-22	FERRITE			
FB301	1-500-113-22	FERRITE			
FB311	1-500-113-22	FERRITE			
FB312	1-500-113-22	FERRITE			
FB313	1-500-113-22	FERRITE			
		< FILTER >			
FL1	1-236-711-21	FILTER, BAND PASS			
		< IC >			
IC1	8-759-564-18	IC TA2104AFN(EL)			
IC101	1-418-581-11	EG UNIT (WFX)			
IC701	8-759-653-11	IC TC9327AF-621			
IC702	8-759-457-70	IC XC62RP1602MR			
IC703	8-759-457-68	IC AK93C45AV-L			
		< JACK >			
J301	1-785-164-11	JACK (🎧)			
J303	1-750-061-11	JACK,DC(POLARITY UNIFIED TYPE) (DC IN 3V) (E,EA,9E,CH)			

Ref. No.	Part No.	Description			Remark
		< JUMPER RESISTOR >			
JC101	1-216-296-00	METAL CHIP	0	5%	1/8W
JC102	1-216-296-00	METAL CHIP	0	5%	1/8W
JC103	1-216-864-11	METAL CHIP	0	5%	1/16W
JC106	1-216-296-00	METAL CHIP	0	5%	1/8W
JC107	1-216-296-00	METAL CHIP	0	5%	1/8W
JC108	1-216-864-11	METAL CHIP	0	5%	1/16W
JC109	1-216-295-00	METAL CHIP	0	5%	1/10W
JC110	1-216-295-00	METAL CHIP	0	5%	1/10W
JC111	1-216-296-00	METAL CHIP	0	5%	1/8W
		< COIL >			
L1	1-416-596-11	COIL (RF) (FM TRACKING)			
L2	1-501-987-21	AM FERRITE-ROD ANTENNA (AM TRACKING)			
L3	1-416-595-11	COIL (OSC) (FM FREQUENCY COVERAGE)			
L4	1-415-962-11	COIL (OSC) (AM FREQUENCY COVERAGE)			
L401	1-412-991-11	INDUCTOR	10uH		
L701	1-412-995-21	INDUCTOR	22uH		
L702	1-412-973-11	INDUCTOR	0.33uH		
		<LIQUID CRYSTAL>			
ND701	1-803-764-11	DISPLAY PANEL, LIQUID CRYSTAL			
		< PHOTO INTERRUPTER >			
PH751	8-749-016-61	REFLECTOR NJL5197K-W-F20(TE1)			
		< TRANSISTOR >			
Q2	8-729-602-21	TRANSISTOR 2SC4154-F (US,CND,5E,6E)			
Q51	8-729-420-24	TRANSISTOR 2SB1218A-QRS			
Q52	8-729-402-13	TRANSISTOR XN1501			
Q53	8-729-015-76	TRANSISTOR UN5211			
Q303	8-729-402-13	TRANSISTOR XN1501			
Q304	8-729-807-86	TRANSISTOR 2SB1295-UL5			
Q305	8-729-015-76	TRANSISTOR UN5211			
Q401	8-729-602-21	TRANSISTOR 2SC4154-F			
Q603	8-729-421-26	TRANSISTOR UN5216			
Q604	8-729-046-89	TRANSISTOR 2SB970-S(TX).S0			
Q605	8-729-046-89	TRANSISTOR 2SB970-S(TX).S0			
Q606	8-729-046-89	TRANSISTOR 2SB970-S(TX).S0			
Q607	8-729-421-26	TRANSISTOR UN5216			
Q701	8-729-602-21	TRANSISTOR 2SC4154-F			
Q702	8-729-231-96	TRANSISTOR 2SK880GR-TE85L			
Q703	8-729-423-55	TRANSISTOR 2SC3931-D			
Q751	8-729-421-26	TRANSISTOR UN5216			
Q752	8-729-420-24	TRANSISTOR 2SB1218A-QRS			
		< RESISTOR >			
R1	1-216-853-11	METAL CHIP	470K	5%	1/16W
R2	1-216-853-11	METAL CHIP	470K	5%	1/16W
R3	1-216-853-11	METAL CHIP	470K	5%	1/16W
R4	1-216-821-11	METAL CHIP	1K	5%	1/16W
R5	1-216-853-11	METAL CHIP	470K	5%	1/16W
R6	1-216-853-11	METAL CHIP	470K	5%	1/16W
R7	1-216-853-11	METAL CHIP	470K	5%	1/16W
R8	1-216-864-11	METAL CHIP	0	5%	1/16W
R9	1-216-817-11	METAL CHIP	470	5%	1/16W
R10	1-216-827-11	METAL CHIP	3.3K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R11	1-216-296-91	SHORT	0		
R12	1-216-833-91	RES-CHIP	10K	5%	1/16W
R13	1-216-821-11	METAL CHIP	1K	5%	1/16W
R14	1-216-845-11	METAL CHIP	100K	5%	1/16W
					(EXCEPT US,CND,5E,6E)
R15	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R16	1-216-821-11	METAL CHIP	1K	5%	1/16W
R17	1-216-839-11	METAL CHIP	33K	5%	1/16W
R18	1-216-839-11	METAL CHIP	33K	5%	1/16W
R19	1-216-815-11	METAL CHIP	330	5%	1/16W
R20	1-216-821-11	METAL CHIP	1K	5%	1/16W
					(US,CND,5E,6E)
R21	1-216-864-11	METAL CHIP	0	5%	1/16W
R22	1-216-864-11	METAL CHIP	0	5%	1/16W
R52	1-216-819-11	METAL CHIP	680	5%	1/16W
R53	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R54	1-216-847-11	METAL CHIP	150K	5%	1/16W
R55	1-216-833-91	RES-CHIP	10K	5%	1/16W
R100	1-216-864-11	METAL CHIP	0	5%	1/16W
					(EXCEPT E,EA,9E,CH)
R107	1-216-791-11	METAL CHIP	3.3	5%	1/16W
					(US,CND)
R107	1-216-797-11	METAL CHIP	10	5%	1/16W
					(EXCEPT US,CND,FR)
R107	1-216-811-11	METAL CHIP	150	5%	1/16W
					(FR)
R108	1-216-811-11	METAL CHIP	150	5%	1/16W
					(EXCEPT US,CND,FR)
R108	1-216-817-11	METAL CHIP	470	5%	1/16W
					(US,CND,FR)
R109	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R207	1-216-791-11	METAL CHIP	3.3	5%	1/16W
					(US,CND)
R207	1-216-797-11	METAL CHIP	10	5%	1/16W
					(EXCEPT US,CND,FR)
R207	1-216-811-11	METAL CHIP	150	5%	1/16W
					(FR)
R208	1-216-811-11	METAL CHIP	150	5%	1/16W
					(EXCEPT US,CND,FR)
R208	1-216-817-11	METAL CHIP	470	5%	1/16W
					(US,CND,FR)
R209	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R304	1-216-821-11	METAL CHIP	1K	5%	1/16W
R305	1-216-821-11	METAL CHIP	1K	5%	1/16W
R310	1-216-821-11	METAL CHIP	1K	5%	1/16W
R401	1-216-845-11	METAL CHIP	100K	5%	1/16W
R402	1-216-821-11	METAL CHIP	1K	5%	1/16W
R403	1-216-845-11	METAL CHIP	100K	5%	1/16W
R404	1-216-813-11	METAL CHIP	220	5%	1/16W
R606	1-216-845-11	METAL CHIP	100K	5%	1/16W
R608	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R609	1-216-833-91	RES-CHIP	10K	5%	1/16W
R610	1-216-821-11	METAL CHIP	1K	5%	1/16W
R611	1-216-864-11	METAL CHIP	0	5%	1/16W
R612	1-216-841-11	METAL CHIP	47K	5%	1/16W
R613	1-216-817-11	METAL CHIP	470	5%	1/16W
R614	1-216-817-11	METAL CHIP	470	5%	1/16W
R615	1-216-817-11	METAL CHIP	470	5%	1/16W
R700	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R701	1-216-835-11	METAL CHIP	15K	5%	1/16W
R702	1-216-841-11	METAL CHIP	47K	5%	1/16W
R703	1-216-805-11	METAL CHIP	47	5%	1/16W
R704	1-216-835-11	METAL CHIP	15K	5%	1/16W
R705	1-216-837-11	METAL CHIP	22K	5%	1/16W
R706	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R707	1-216-864-11	METAL CHIP	0	5%	1/16W
R708	1-216-845-11	METAL CHIP	100K	5%	1/16W
R711	1-216-821-11	METAL CHIP	1K	5%	1/16W
R715	1-216-853-11	METAL CHIP	470K	5%	1/16W
R722	1-216-821-11	METAL CHIP	1K	5%	1/16W
R723	1-216-821-11	METAL CHIP	1K	5%	1/16W
R724	1-216-821-11	METAL CHIP	1K	5%	1/16W
R726	1-216-833-91	RES-CHIP	10K	5%	1/16W
R727	1-216-833-91	RES-CHIP	10K	5%	1/16W
R728	1-216-833-91	RES-CHIP	10K	5%	1/16W
R729	1-216-833-91	RES-CHIP	10K	5%	1/16W
R751	1-216-817-11	METAL CHIP	470	5%	1/16W
R752	1-216-851-11	METAL CHIP	330K	5%	1/16W
R753	1-216-853-11	METAL CHIP	470K	5%	1/16W
R754	1-216-821-11	METAL CHIP	1K	5%	1/16W
R755	1-216-853-11	METAL CHIP	470K	5%	1/16W
R756	1-216-853-11	METAL CHIP	470K	5%	1/16W
R757	1-216-853-11	METAL CHIP	470K	5%	1/16W
R758	1-216-853-11	METAL CHIP	470K	5%	1/16W
R759	1-216-845-11	METAL CHIP	100K	5%	1/16W
R761	1-216-833-91	RES-CHIP	10K	5%	1/16W
R770	1-216-833-91	RES-CHIP	10K	5%	1/16W
R771	1-218-871-11	METAL CHIP	10K	0.5%	1/16W
		< VARIABLE RESISTOR >			
RV301	1-225-362-11	RES, VAR, CARBON (◢ VOL)			
RV601	1-241-784-11	RES, ADJ, CARBON 5K (TAPE SPEED)			
		< SWITCH >			
S301	1-771-040-21	SWITCH, PUSH (OPEN DET)			
S601	1-771-598-11	SWITCH, SLIDE (RVS/REW/FF/FWD)			
S701	1-572-922-11	SWITCH, SLIDE (HOLD ➘)			
		< TRANSFORMER >			
T1	1-416-594-11	TRANSFORMER, IF (AM IF)			
T401	1-449-021-21	TRANSFORMER, DC/DC CONVERTER			
		< THERMISTOR >			
TH601	1-810-794-11	THERMISTOR, POSITIVE			
		< VIBRATOR >			
X1	1-781-367-21	FILTER, CERAMIC(DISCRIMINATOR)			
X701	1-577-262-11	VIBRATOR, CRYSTAL (75kHz)			
**********					
		MISCELLANEOUS			
		**********			
HP901	1-500-555-11	HEAD, MAGNETIC (PLAYBACK)			
L2	1-501-987-21	AM FERRITE-ROD ANTENNA (AM TRACKING)			
M901	1-763-073-11	MOTOR, DC (CAPSTAN/REEL)			
					(INCLUDING PULLEY)
ND701	1-803-764-11	DISPLAY PANEL, LIQUID CRYSTAL			
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Ref. No.	Part No.	Description	Remark
		ACCESSORIES & PACKING MATERIALS	
		**********	
	1-505-521-11	HEADPHONE (MDR-023) (FX491:CND)	
	1-505-521-21	HEADPHONE (MDR-023SP) (FX493:US)	
	3-042-385-01	CASE, CARRYING (FX491:CND,5E,6E,FX491ST/ FX493:US,5E,6E,FX493ST)	
	3-044-230-01	CLIP, BELT (FX491:CND,5E,6E,FX491ST/ FX493:US,5E,6E,FX493ST)	
	3-318-203-71	SCREW (B1.7X5), TAPPING (FX493,FX493ST)	
	3-867-999-11	MANUAL, INSTRUCTION (FX491:AEP,FR/FX493:AEP,FR) (ENGLISH,FRENCH,GERMAN,ITALIAN)	
	3-867-999-21	MANUAL, INSTRUCTION (FX491:AEP/FX493:AEP) (SPANISH,PORTUGUESE,DUTCH,SWEDISH)	
	3-867-999-31	MANUAL, INSTRUCTION (FX491:CEV/FX493:CEV) (ENGLISH,HUNGARIAN,CZECH,RUSSIAN)	
	3-867-999-41	MANUAL, INSTRUCTION (FX491:CEV/FX493:CEV) (POLISH,GREEK,TURKISH,SLOVAKIAN)	
	3-867-999-51	MANUAL, INSTRUCTION (FX491:5E,6E/FX493:US,5E,6E/FX493ST:US) (ENGLISH,SPANISH,PORTUGUESE)	
	3-867-999-61	MANUAL, INSTRUCTION (FX491:CND,FX491ST/FX493:EA/ FX493ST:CND)(ENGLISH,FRENCH,ARABIC)	
	3-867-999-71	MANUAL, INSTRUCTION (FX491:E) (ENGLISH,TRADITIONAL,CHINESE,KOREAN)	
	3-867-999-81	MANUAL, INSTRUCTION(FX491:9E/FX493:9E) (ENGLISH,TRADITIONAL,CHINESE,KOREAN)	
	3-867-999-91	MANUAL, INSTRUCTION (FX491:AEP,CH/FX493:AEP,CH) (ENGLISH,FINNISH,SIMPLIFIED CHINESE)	
	8-953-130-90	HEADPHONE MDR-E805LP (FX491:AEP,CEV,FR,E,5E,6E,9E,CH)	
	8-953-273-83	RECEIVER,EAR MDR-G051LP (FX491ST)	
	8-953-304-90	RECEIVER MDR-E805SP (FX493:AEP,CEV,FR,5E,6E,9E,EA,CH)	
	8-953-774-90	RECEIVER,EAR MDR-G051SP (FX493ST)	
	A-3052-171-A	REMOTE CONTROL ASSY (FX493,FX493ST)	

REVISION HISTORY

Clicking the version allows you to jump to the revised page.
Also, clicking the version at the upper right on the revised page allows you to jump to the next revised page.

Ver.	Date	Description of Revision
1.2	2001.08	Addition of new “WM” logo model. (ENG-01017)
1.1	2001.07	Addition of servicing notes. (SPM-01030)
1.0	2000.01	New